

Serial No. 10/038,946
Docket No. BUJ 005 P2

AMENDMENTS TO THE DRAWINGS

Substitute replacement drawings for all of the drawing figures, with these drawings being shown on the attached replacement pages.

REMARKS

The comments of the Examiner in his allowance of claims 1-7 and 9-12, his objection to claim 20, and his rejection of claims 13-19 have been given consideration by the Applicant and, in view of those comments, Applicant submits the foregoing amendments as placing the claims in condition for allowance and requests favorable consideration of the amended claims.

A set of replacement drawings showing all of the figures is attached. Based on the comments of Applicant in his last response to the Examiner's Office Action, it is submitted that the objection to the drawings should be withdrawn. The drawing sheets submitted with Applicant's last response to an Office Action were for purposes of responding to rejection of the claims, not as replacement pages. Applicant apologizes for any confusion that may have been caused.

Turning now to the objection to claim 20, its limitations have been incorporated into independent claim 17 such that claim 17 as now amended is submitted as being allowable, claim 20 having been cancelled. Claim 18 which depends from claim 17 is also submitted as now being allowable as depending from an allowable claim. Claim 19 has also been cancelled per the comments of the Examiner. Although the Examiner has a new grounds of rejection for claims 17-18 based on Ramberg, that rejection is submitted as being moot since the limitations of objected to claim 20 have been incorporated into claim 17. Applicant has also amended claims 1 and 4 to clarify how much of the end pieces are knurled. Although this is readily discernible from the drawings, the amendment is believed to make the limitation more definite and clear.

Therefore claims 1-7, 9-12, and 17-18 are all allowable, with only the rejection of claims 113-16 yet needing discussion.

Turning now to the other currently rejected claims, the Examiner has rejected claims 13-16 under Section 102(b) based on Kreft. The Examiner states that Kreft shows a shaft for the transmission of torsional loads, the shaft comprising: an elongated inner tube member 5, an end piece 3 located adjacent each end of the inner tube member; a composite material covering the inner tube member and at least a portion of each of the end pieces, the composite material mechanically attached to each end piece, wherein the composite material includes elongated fibers, the elongated fibers being wound about the inner tube member and at least a portion of each end piece whereby shear loads in the composite material are transferred longitudinally along the length of the elongated fibers. He also concludes that Kreft can be operated at speeds below the first natural frequency of the shaft and to operating loads below maximum operating strength of the shaft. Also, the Examiner argues that Kreft discloses torsional loads are transmitted from the end pieces to the composite material through multiple load paths, since each fiber constitutes a load path, and that torque is transmitted directly from the inner tube member to the end piece via the clamping ring 2 and indirectly from the inner tube member to the end piece. The Examiner also rejected claim 13-16 due to a concern about the definiteness of “end piece”.

Applicant has amended claim 13 to eliminate the concern about “end piece” and to overcome the rejection under Kreft. Claim 13 as amended now recites that the elongated inner tube member has opposing open ends, that the composite material is in contact with and covers

the entire inner tube member and at least a portion of each of the end pieces with the composite material being mechanically attached to each of the said end pieces, and that the elongated fibers are wound about the inner tube member and at least a portion of each of the said end pieces.

As amended, claim 13 recites that the elongated inner tube member has opposing open ends as stated in Applicant's specification. Looking carefully at the specification and drawings of Kreft, tube 5 does not have open ends. Not only is that limitation specifically not recited in Kreft, it is clearly not disclosed as such in the drawings. What Kreft does have that has opposing open ends is wound material 6, as perhaps can best be appreciated from a comparison of Kreft's Figs. 1 and 2a. In column 4, lines 3-10, Kreft discusses his core of aerated plastic 5 with fibers 6 forming the mid-section 1, as can be further appreciated by Kreft's conclusion of his discussion of the winding found in column 4, lines 23-28. The Examiner has correctly stated that this winding is of the composite material, however Kreft does not satisfy the limitation of claim 1 that the inner tube has opposing open ends. Further, there is no motivation or teaching in Kreft to modify its inner tube 5 to have opposing open ends.

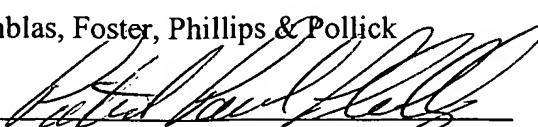
Claim 13 has also been amended to better clarify the fact that the composite material is in contact with and cover the entire inner tube member, and is in contact with and covers at least a portion of each of the end pieces. As Kreft readily discloses in its Fig. 1, and as recognized by the Examiner, the material in Kreft is not in contact with and covering the entire inner tube member 5 of Kreft, but only part of it. The endmost sections of the inner tube member 5 of Kreft are not in contact with the composite material. They are in contact with the interior surface of

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Kreft's end piece 3. Kreft clearly shows that some of the wound material 6 is separated by end piece 3 from, and thus not in contact with, the curved end of inner tube 5 which is in contact with the dished mating surface of the end piece 3. Thus this limitation of Applicant's claim is not anticipated by Kreft and further would not be obvious since there is no teaching or motivation I Kreft to have the composite material completely in contact with the entire inner tube. In fact, to do so would necessitate having the composite material covered by the end piece contrary to the plain teaching of Kreft. Thus, the winding of Applicant's invention in the manner described by Applicant is neither anticipated nor obvious based on Kreft.

In view of the amendments claims, and the foregoing remarks, claims 1-7 and 9-18 are submitted for further consideration as being patentable. The allowance of these claims is respectfully solicited. If the Examiner has any questions which would expedite issuance of a Notice of Allowance, a telephone call to the undersigned is requested during normal working hours. The Commissioner is authorized to charge Deposit Account No. 13-3393 for any insufficient fees under 37 CFR §§ 1.16 or 1.17, or credit any overpayment of fees.

Respectfully submitted,

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October 10, 2006
Enclosures - Substitute drawing sheets (6)